

Via Electronic Mail

March 7, 2019

Joseph A. Gowers
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USEPA Region II
290 Broadway, 19th Floor
New York, New York 10007-1866

Re: Ringwood Mines/Landfill Superfund Site
Groundwater Focused Feasibility Study
Response to Comments

Dear Mr. Gowers:

On behalf of Ford Motor Company (Ford), this letter provides a response to the US Environmental Protection Agency's (USEPA) comments communicated in your letter dated December 20, 2018, regarding the *OU-3 Site-Related Groundwater Focused Feasibility Study* (Groundwater FFS) prepared by Cornerstone Engineering Group, LLC and submitted on October 10, 2018, for the Ringwood Mines/Landfill Superfund Site (the Site). The USEPA's comments are reiterated below in italics, followed by responses in standard font. The Groundwater FFS report revised per this response to comments is attached.

General Comments:

1.- Risk discussions throughout the FFS indicate that the potential risk associated with exposure to groundwater and mine water at the site is not significant. These discussions must be revised to discuss risk, as calculated in the 2018 Addendum to the Baseline Human Health Risk Assessment Calculations for Site-Related Groundwater, relative to EPA's acceptable risk ranges for carcinogenic and non-carcinogenic risk. Furthermore, discussions of the protectiveness of the developed remedial alternatives should be revised accordingly.

The September 2018 Groundwater FFS discusses the risk calculations as shown in the 2018 Addendum to the Baseline Human Health Risk Assessment. Section 3.3 of the Groundwater FFS presents the calculated potential cancer risk of 2×10^{-4} for the hypothetical future resident, reasonable maximum exposure (RME) scenario for

groundwater as a potable supply, and 4×10^{-4} for the hypothetical future resident RME scenario assuming mine water in the PMP Air Shaft is used as a potable water supply. Both of these calculations are higher than the upper bound of the USEPA's acceptable risk range and are so noted in the Groundwater FFS.

Both the USEPA-approved 2018 Addendum to the Baseline Human Health Risk Assessment and the Groundwater FFS clarify these calculations by noting the multiple conservative assumptions that the USEPA has required for these calculations such as a 52-year exposure duration (26 years is the USEPA's default), and not considering the regulations at NJAC 7:9D-2.3(a)3.i which would require casing in the overburden and preclude use of overburden groundwater regardless of its classification. In addition, the risk calculations are dominated by the risk contribution from arsenic, arsenic is a Site-related COC but is also naturally occurring, and the relative risk contribution from these potential sources is not distinguishable. Last, the mine water is not native groundwater and would not be used as a potable water supply regardless of the USEPA requiring that such an assumption be made. The 2018 Addendum to the Baseline Human Health Risk Assessment further notes that if the carcinogenic risk calculations are performed for only the bedrock groundwater analytical data, which is representative of the hypothetical exposure scenario, then the calculation is within the USEPA's acceptable risk range. For all of the above reasons indicating that the Site-related, calculated risk is not significant is considered appropriate. However, based on conference calls with representatives of the USEPA on February 5 and 20, 2019, the term insignificant as relates to the risk calculations is not used, and the following language is used to summarize the risk calculations and provide perspective on the conservative assumptions:

"The Baseline Human Health Risk Assessment calculations use multiple levels of conservatism to evaluate the reasonable maximum exposure to Site-related contaminants in order to assure protection of human health and the environment. The risk calculations, using these conservative assumptions that reflect the high-end potential exposures at the Site and include Site-specific information from the community, result in risk estimates only slightly above the USEPA's acceptable risk range. These risk estimates do not include engineering or institutional controls, such as the requirement in NJAC 7:9D-2.3(a)3.i that the upper 50' of the aquifer (i.e., the overburden aquifer) be cased off. For example, if this casing requirement is reflected in the risk estimates, the risk calculations for the potential residential use of Site-wide groundwater would be within the USEPA acceptable risk range."

In various sections of the Groundwater FFS where the human health risk assessment results are presented in a more limited, summary fashion, the following language (with minor variations for context) is used:

“...human health risk calculations for future potable use scenarios of groundwater at the Site using multiple conservative assumptions only slightly above the USEPA’s acceptable risk threshold...”

2.- EPA's definition of the No Action Alternative does not allow for consideration of institutional controls. Therefore, the No Action Alternative evaluated in the FFS must be revised to eliminate institutional controls as a component of the alternative. The No Action Alternative should involve no action and no cost. Cornerstone may consider renaming the current alternative and keeping it as an additional "Limited Action Alternative" in the FFS.

The No Action Alternative has been modified to eliminate the CEA as a component of the alternative.

3.- NJDEP has requested that an additional "closure only" alternative for the PMP Air Shaft be evaluated in the FFS. This alternative would tightly seal the bottom of the Air Shaft using a cement/bentonite material and then continue sealing to the surface of the Air Shaft. This alternative would preclude the treatment component of Alternative 6 but would seal the potential connections to the Peter's Mine Pit located at 230 feet and 180 feet bgs.

A closure alternative for the PMP Air Shaft has been added to the Groundwater FFS. However, this alternative cannot start with placement of a conventional cement-bentonite grout at the base of the Air Shaft. The Air Shaft is interconnected with the inclined mine shaft and if cement-bentonite grout is placed at the base it will flow down the inclined shaft. As noted in the September 2018 Groundwater FFS, large angular stone would be placed at the base of the Air Shaft to “...stabilize the base for grout placement...” Alternatively, a low-slump, fast-setting grout could be used in lieu of angular rock to stabilize the base of the Air Shaft. For this option, the fast-setting grout would have to be placed in stages allowing time for initially placed grout to set, followed by additional grout, and repeat this process until the inclined shaft is fully blocked. The closure only alternative, therefore, also includes this initial stabilizing step.

4.- Figures displaying the conceptual design of Alternative 6 and the additional "closure only" alternative described above should be included in the FFS. These figures should be similar to Figure 4B and should present the cross-sectional view of the Air Shaft, mine workings, and connections to the Peters Mine Pit, along with displaying and labeling the components of each of the alternative remedial approaches.

The requested figures have been added as Figure 28 of the Groundwater FFS. In addition, for consistency, a figure has also been added for the Air Shaft air diffusion alternative.

5.- During review of the RI Addendum Report, EPA requested that uncertainty language be included to recognize the limitations of the BIOCHLOR model in predicting the extent of the 1,4-dioxane plume. Language in the FFS should be revised to reflect this uncertainty. For example, on page 25, the FFS states "This modeling indicates that 1,4-dioxane concentrations will decline below its GWQS of 0.4 ug/L downgradient of the PMP Area within Site boundaries...."

The following language has been added regarding the BIOCHLOR modeling:

"The modeling is a screening tool only and subject to uncertainties such as the inability to model a discrete fracture network. Its primary purpose is to support completion of the RI and it is not a substitute for groundwater and surface water monitoring."

In addition to the above, at various points in the text where the modeling is referenced, the words "...subject to the limitations of the modeling..." have been added.

6.- Additional groundwater monitoring wells, as well as details for long term monitoring (sampling parameters and sampling frequency), are currently proposed in the FFS for some of the alternatives. The FFS should be revised to clearly indicate that the details of the long-term groundwater monitoring plan and sentinel well network will be determined during the remedial design stage and that the details provided in the FFS serve to estimate costs for each remedial alternative. Please note that additional wells may be necessary, and the final numbers and locations of wells will be determined during the design of the remedy.

The following language has been added to the discussion of the groundwater monitoring components for the applicable alternatives:

"The monitoring program described herein provides a basis for the alternative evaluation in this FFS and will be confirmed during the remedial design."

7.- The isoconcentration figures for 1,4-dioxane in both overburden and bedrock need to be expanded to include the entire site and not just the Peter's Mine Pit area.

The distribution of Site COCs in areas of the Site other than the Peters Mine Pit (PMP) Area is limited, intermittent, and sporadic. For example, in the Cannon

Mine Pit (CMP) Area, 1,4-dioxane was detected in 2017 in the shallow bedrock in only two locations and at concentrations below the groundwater quality standard (GWQS). In the deeper bedrock in the CMP Area, 1,4-dioxane was detected in 2017 in only monitoring well RW-2 and the CMP Shaft immediately adjacent to each other, and at substantially different concentrations at varying depths. Because of the limited and variable data in areas of the Site other than the PMP Area, during a conference call on February 11, 2019 with representatives of the USEPA, it was agreed that additional isoconcentration mapping would not be applicable.

Specific Comments:

1.- Executive Summary, Page xii, Top of Page – This section should be revised to clearly acknowledge that 1,4-dioxane has been detected in surface water beyond the Site boundaries.

The following wording has been added:

“...although 1,4-dioxane has been detected in surface water beyond the Site boundaries but not downstream of Sally’s Pond....”

2.- Page 10, First Paragraph – This paragraph should be revised to clarify that excavated waste materials were disposed of off-site at appropriately permitted facilities.

The paragraph at the top of Page 10 has been revised to read as follows:

“Surficial paint waste, soil, and other waste materials have been removed from various excavation areas at the Site and disposed of off-site at appropriately permitted facilities between 2004 and 2014.”

3.- Page 14, Second Bullet – This bullet must be revised to note the connectivity between mine water and groundwater at the site.

The wording in this bullet has been revised as follows:

“Groundwater and mine water are somewhat distinct as the mine water is largely stagnant although interconnected with the bedrock aquifer, and....”

4.- Page 14, Last Paragraph – This paragraph should be revised to discuss whether COCs are discharging to surface water at concentrations in excess of NJ Groundwater Quality Standards or drinking water standards, given that surface water discharges to the Wanaque Reservoir.

This section is just an overview and the requested details are discussed in Section 3.2.3 of the Groundwater FFS. For this overview section, the wording has been revised as follows:

“... although 1,4-dioxane is detected in surface water within and beyond the site boundaries above Groundwater Quality Standards (see further discussion in Section 3.2.3), it does not occur....”

5.- Page 17, First Paragraph - *This discussion must be revised to reflect the fact that Groundwater RI results indicate both an upward and downward vertical gradient in well [sic] in and immediately downgradient of the PMP Area.*

This summary appropriately indicates that the prevailing groundwater flow is upward toward the regional discharge point to surface water, as illustrated in Figure 16 of the Groundwater RIR Addendum. However, to respond to this comment, the wording in this paragraph has been modified as follows:

“The results of the Groundwater RI, including the geochemical and environmental tracer study show that in the PMP Area, groundwater in bedrock generally has an upward vertical gradient although both upward and downward gradients have been observed on a localized basis in wells in the area.”

6.- Page 20, First Bullet – *This bullet must be revised to clarify that benzene has also been detected in paint sludge.*

This bullet has been revised as follows:

“Benzene is a Site-related COC found in the fill/waste and in paint waste, and is also a common constituent in lubricants and petroleum products that would have been in widespread use in the mine workings.”

7.- Page 25, Fourth Bullet – *This bullet must be revised to acknowledge that arsenic may also be related to paint sludge.*

This bullet has been edited as follows:

“... except for sporadic detections of naturally occurring minerals (e.g., iron, manganese) and arsenic which is both Site-related and naturally occurring.”

8.- Page 26, First Bullet – *Delete the word "well" from the second line of this bullet.*

Typographical error corrected.

9.- Page 41, Last Paragraph – *This paragraph should be revised to clarify that the results of the CSIA investigation did not indicate that biodegradation of 1,4-dioxane was occurring at the site.*

The last bullet has been revised as follows:

“Additionally, the SIP and Bio-Trap® study conducted in the PMP Area confirmed the presence of microbial populations that are degrading organic COCs in the PMP Area groundwater under the existing moderately reducing conditions, although the CSIA results did not indicate measurable microbial degradation of 1,4-dioxane.”

10.- Page 51, Section 6.2.2, First Paragraph – *This paragraph must be revised to note the hydraulic communication between mine water and the bedrock aquifer at the site.*

The first sentence in this paragraph has been revised as follows:

“Concentrations of COCs, and in particular benzene and 1,4-dioxane, are among the highest detected at the Site in the mine water within the PMP Air Shaft which is largely stagnant water at the base of the shaft that is in hydraulic communication with the deeper historic iron mine system, and to a lesser extent in hydraulic communication with the bedrock aquifer based on the relatively low hydraulic conductivity of the bedrock.”

11.- Page 70, Section 7.2.1, No Action Alternative - *EPA's definition of the No Action Alternative does not allow for consideration of institutional controls. Consideration of institutional controls which may be required by NJ must be eliminated from this alternative.*

See response to General Comment No. 2.

12.- Page 73 – *This page of the FFS Report does not identify overburden well OB-18 as a proposed well for the monitoring program for the OCDA. However, Figure 23 does identify it as a sentinel well for the monitoring program. Please clarify whether well OB-18 is proposed for inclusion in the monitoring program.*

Monitoring well OB-18 has been added to the text to correspond to Figure 23.

13.- Page 75, Second Bullet – *The locations of the proposed surface water sampling locations should be clearly denoted on a figure in the FFS.*

Figure 27 has been added to the Groundwater FFS to illustrate the surface water sampling locations.

14.- Figures 5 through 14 - Page 21 of the FFS Report indicates, "These figures depict monitoring data for the two most recent Sitewide sampling events in 2016 and 2017, with the highest concentration from the two events used to prepare the figures." However, the FFS figures include a disclaimer that the August 2016 data were used to create the maps. This discrepancy should be resolved in the revised FFS report

The wording in the note and the title blocks on Figures 5 through 14 has been modified to comport with the wording in the Groundwater FFS report, as the figures were prepared using both the 2016 and 2017 monitoring data.

Please contact us if you have questions or comments on this response to comments or the enclosed, revised Groundwater FFS.

Sincerely,

CORNERSTONE ENVIRONMENTAL GROUP, LLC



Gary J. DiPippo, Professional Engineer.
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Enclosure

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